Application No.: 10/584,050

REMARKS

Introduction

In response to the Office Action dated August 5, 2008, Applicants have amended the specification and claims 1, 3, 4, 5, 7 and 8. Support for amended claims 1, 3, 4, 5, 7 and 8 is found in, for example, pg. 3, lines 8-22 and pg. 5, lines 4-10. Care has been taken to avoid the introduction of new matter. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Specification

The Office Action asserts that the use of the trademark KEPITAL F25-03H should be capitalized wherever it appears and be accompanied by generic terminology.

The specification has been amended to address the issue identified by the Examiner.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-2, 4, and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,212,222 to Mitsuuchi et al. ("Mitsuuchi"). Applicants traverse.

The Office Action asserts that Mitsuuchi teaches a polyacetal composition including a polyoxymethylene composition (POM) and a stabilizer system comprising hindered phenols, such as, triethylene glycol bis-[3-(3-tert-butyl-5-methyl-4-hydroxypheny)-propionate], metal containing an organic acid salt, such as, magnesium stearate, and nitrogen containing compounds, such as, melamine. The Examiner contends that the amounts of stabilizers in the composition disclosed by Mitsuuchi overlaps the composition of the instant invention, and concludes that this is prima facie evidence of obviousness.

Application No.: 10/584,050

Turning to the prior art, Mitsuuchi describes a composition comprising polyacetal, carbon black-impregnated ethylenic carrier polymer in amounts to yield between about 0.1 to 30 parts by weight of carbon black, first stabilizer selected from nitrogen-containing compound which contain a hydroxide, an inorganic acid salt or carboxylic acid salt of an alkali metal or an alkaline earth metal, and a second stabilizer that is a hindered phenolic compound.

According to the claimed subject matter per amended claim 1, a polyoxymethylene composition includes polyoxymethylene (POM) 100 parts by weight, and magnesium stearate 0.1-2.0 parts by weight, antioxidant 0.01-1.0 parts by weight. Thereby, as taught in the instant specification, the magnesium stearate is added as an ingredient into the composition to improve fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene (*see, e.g.*, pg. 9, lines 5-13 of the originally filed specification).

Mitsuuchi is directed to recyclable carbon black-laden polyacetal resin compositions that exhibit improved melt-stability, whereas in an unrelated application, the present claimed subject matter focuses on improving fuel resistance. Further, Mitsuuchi states in col. 6, lines 14-17:

> When the amount of the first stabilizer component is less than 0.01 part by weight, little (if any) improvements in heat stability can be attained.

There is **no factual basis** upon which to predicate the determination that the structure of Mitsuuchi **necessarily** includes a POM composition corresponding to that claimed, particularly having 0.1-2.0 parts by weight of magnesium stearate to improve fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of POM. That is, Mitsuuchi does not disclose or suggest that the magnesium stearate contributes to the unexpected improvement in fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene made possible by the claimed POM composition.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Mitsuuchi to modify the amount of magnesium stearate or to improve the fuel resistance against diesel having sulfur compounds or gasoline that causes the decomposition of POM, nor does common sense dictate the Examiner-asserted modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Mitsuuchi. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of a POM composition having fuel resistance against diesel having sulfur compounds or gasoline that causes the decomposition of POM and the claimed weight of magnesium stearate is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 3, 5-6, and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuuchi as applied to claims 1-2, 4, and 7 above and in view of U.S. Patent No. 5,777,019 to Anada.

Dependent claims 3, 5-6, and 8 are allowable for at least the same reasons as independent claim 1, and further distinguish the claimed POM composition.

The Office Action acknowledges that Mitsuuchi does not explicitly disclose that the reinforcing filler comprises 50 parts by weight or less. The Office Action relies on Anada in an

attempt to cure the deficiencies of Mitsuuchi. The Examiner contends that Anada discloses a composition comprising a polyacetal resin and a glass type inorganic filler, such as, a glass fiber or flake that are added to the composition in the amounts of 3 to 200 parts by weight. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the composition of Mitsuuchi to include amounts of the glass filler as taught by Anada with a reasonable expectation of success.

Anada relates to a polyacetal resin composition comprising a polyacetal resin, a glass type inorganic filler and a boric acid compound that provides the molded articles with an excellent mechanical strength. Anada fails to disclose or suggest, a POM resin composition that provides molded articles with an excellent fuel resistance where the molded articles are used in parts that directly contact fuel, such as, gasoline or diesel, as required by amended claim 1. Anada fails to disclose or infer, "...a polyoxymethylene composition for producing a shaped article directly in contact with diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene, said polyoxymethylene composition comprises: 100 parts by weight of polyoxymethylene polymer (A); 0.1-2.0 parts by weight of magnesium stearate (B); and 0.01-1.0 parts by weight of an antioxidant (C)," as recited by amended claim 1. Thus, Anada fails to cure the deficiencies of Mitsuuchi.

As Mitsuuchi and Anada do not disclose the same POM composition as disclosed by the present inventors, and even if combined still fail to disclose or suggest the elements recited by amended claim 1, the combination of Mitsuuchi and Anada does not render the POM composition as recited by amended claim 1 obvious.

Application No.: 10/584,050

Claims 1-2, 4, and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over KR 10-2003-0048733 to Lim et al. ("Lim").

The Office Action asserts that Lim discloses a composition comprising a polyacetal resin, 0.01 to 5 parts by weight of an antioxidant, 0.01 to 2 parts by weight of a formaldehyde reactive material, such as, melamine, and 0.05 to 4 parts by weight of acid salt compounds including magnesium stearate. The Examiner contends that Lim discloses that the amount of formaldehyde stabilizer is greater than 2 parts by weight the reactive material is segregated at the surface of the molded article and becomes unusable. The Examiner contends that if the compositions of Lim are used to produce shaped articles, such as, water pipes, water tanks, and items that require chlorine resistance. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected amounts of the stabilizers disclosed by Lim, as it is well settled that where the prior art describes the components of a claimed compound in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established.

Lim discusses a composition comprising a POM, a sterically hindered phenol or a sterically hindered amine anti-oxidant, a zinc compound, an alkaline earth metal compound, and a material reactive to formaldehyde. The objective of Lim is to improve chlorine resistance for use in a product that contacts chlorine containing water or a product that deals with high concentration of chlorine, whereas in an unrelated application, the present claimed subject matter focuses on improving fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene.

Further, Lim describes that a total amount of the zinc compound and alkaline earth metal compound is 0.1-5 parts by weight, and when the amount is less than 0.1 parts by weight, the chlorine resistance is insufficient. When the amount of the zinc compound and alkaline earth metal compound is more than 5 parts by weight, the tensile strength, the tensile elongation ratio, and the impact strength of POM resin articles decreases. Thus, Lim does not disclose or suggest that the magnesium stearate contributes to the improvement of fuel resistance. That is, Lim does not disclose or suggest that the zinc compound and alkaline earth metal contributes to the unexpected improvement in fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene made possible by the claimed POM composition.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Lim to modify the amount of antioxidant or to improve the fuel resistance against diesel having sulfur compounds or gasoline that causes the decomposition of POM, nor does common sense dictate the Examiner-asserted modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Lim. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of a POM composition having fuel resistance against diesel having sulfur compounds or gasoline that causes the decomposition of POM and the claimed weight of

magnesium stearate is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 3, 5-6, and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim as applied to claims 1-2, 4, and 7 above and in view of Anada.

Dependent claims 3, 5-6, and 8 are allowable for at least the same reasons as independent claim 1, and further distinguish the claimed POM composition.

The Office Action acknowledges that Lim does not disclose that a polyacetal composition comprises a filler in an amount of less than 50 parts by weight. As for the deficiency, the Office Action asserts that Anada discloses a composition comprising a polyacetal resin and a glass type inorganic filler, such as, glass fiber or flake that are added to the composition in the amounts of 3 to 200 parts by weight.

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the composition of Lim to include amounts of the glass filler as taught by Anada with a reasonable expectation of success.

Anada relates to a polyacetal resin composition comprising a polyacetal resin, a glass type inorganic filler and a boric acid compound that provides the molded articles with an excellent mechanical strength. Anada fails to disclose or suggest, a POM resin composition that provides molded articles with an excellent fuel resistance where the molded articles are used in parts that directly contact fuel, such as, gasoline or diesel, as required by amended claim 1. Anada fails to disclose or infer, "...a polyoxymethylene composition for producing a shaped article directly in contact with diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene, said polyoxymethylene composition comprises: 100 parts

by weight of polyoxymethylene polymer (A); 0.1-2.0 parts by weight of magnesium stearate (B); and 0.01-1.0 parts by weight of an antioxidant (C)," as recited by amended claim 1. Thus, Anada fails to cure the deficiencies of Lim.

As Lim and Anada do not disclose the same POM composition as disclosed by the present inventors, and even if combined still fail to disclose or suggest the elements recited by amended claim 1, the combination of Lim and Anada does not render the POM composition as recited by amended claim 1 obvious.

Claims 1-2, 4, and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,191,006 to Matsumoto et al. ("Matsumoto").

The Office Action asserts that Matsumoto discloses a composition comprising a polyacetal resin of 0.01 to 2.0 parts by weight magnesium stearate, 0.05 to 3.0 parts by weight of an anti-oxidant, and 0.01 to 7 parts by weight of a formaldehyde catcher, such as melamine. The Examiner contends that Matsumoto discloses that the composition may comprise fillers or reinforcing material.

Matsumoto describes a composition comprising an oxymethylene copolymer, an ester composed of a polyhydric alcohol and a higher fatty acid and alkaline earth metal salt of a fatty acid. The composition of Matsumoto has excellent thermal stability, particularly to prevent or inhibit decomposition, yellowing, and also foaming, whereas in an unrelated application, the present claimed subject matter focuses on improving fuel resistance.

Matsumoto states that an amount of the alkaline earth metal salt of a fatty acid is 0.01-3 parts by weight, and when the amount of the alkaline earth metal salt of the fatty acid is out of the above range concerned, defects including the deterioration in appearance of a molded article, such as, defective color tone and silver streaks, dimensional failure due to replication of a mold

contamination substance such as a mold deposit to a molded article, and surface roughening is caused. There is **no factual basis** upon which to predicate the determination that the structure of Matsumoto **necessarily** includes a POM composition corresponding to that claimed, particularly to improve fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of POM. That is, Matsumoto does not disclose or suggest that the combination of magnesium stearate and antioxidant contributes to the unexpected improvement in fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene made possible by the claimed POM composition.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Matsumoto to modify the amount of magnesium stearate or to improve the fuel resistance against diesel having sulfur compounds or gasoline that causes the decomposition of POM, nor does common sense dictate the Examiner-asserted modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Matsumoto. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of a POM composition having fuel resistance against diesel having sulfur compounds or gasoline that causes the decomposition of POM and the claimed weight of magnesium stearate is found in Applicants' disclosure. However, the teaching or suggestion to

make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 3, 5-6, and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumoto as applied to claims 1-2, 4, and 7 above and in view of Anada.

Dependent claims 3, 5-6, and 8 are allowable for at least the same reasons as independent claim 1, and further distinguish the claimed POM composition.

Claims 1-8 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 7,098,262 to Kim et al. ("Kim '262") in view of Matsumoto.

As a preliminary matter, the Examiner applies the teachings of Matsumoto to Kim '262 on page 13 of the Office Action, respectively. The Examiner contends that Kim '262 has a common inventor with the instant application and based upon the earlier effective U.S. filing date of the reference constitutes prior art only under 35 U.S.C. § 102(e).

It is noted that in the Declaration filed June 8, 2007, the second inventor's name Chung-Youl Jung was misspelled as Chung-Ryol Jeong. The Applicants will submit a corrected combined Declaration/Power of Attorney shortly. Thus, the instant application has the same inventors as Kim '262.

A rejection under § 102(e) requires the reference to be "by another," an Applicant's own prior work can not be used as a bar against the applicant for obtaining a patent under § 102(c). Hence, Kim '262 can negate the patentability of the pending claims since it is not work by another entity. *See*, 35 U.S.C. § 102(e) and MPEP §§ 715.01(a); 715.01(b); 716.10 and 2136.05. Thus, Kim '262 does not qualify as prior art references under 35 U.S.C. § 102 or 103. Accordingly, the rejections of claims 1-8 predicated on Kim '262 should be withdrawn.

Claims 1-8 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,512,047 to Kim et al. ("Kim '047") in view of Matsumoto.

Kim '047 fails to disclose or suggest, at a minimum, magnesium stearate, as required by amended claim 1.

Matsumoto does not disclose or suggest that the combination of magnesium stearate and antioxidant contributes to the unexpected improvement in fuel resistance against diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene made possible by the claimed POM composition.

As Matsumoto and Kim '047 do not disclose the same POM composition as disclosed by the present inventors, and even if combined still fail to disclose or suggest the elements recited by amended claim 1, the combination of Matsumoto and Kim '047 does not render the POM composition as recited by amended claim 1 obvious.

Withdrawal of the foregoing rejections is respectfully requested.

Double Patenting Rejections

Claims 1-8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4-6, and 17-18 of copending Application No. 11/664,705 in view of Matsumoto. Applicants traverse.

Page 11 of the instant Office Action states that claims 1-8 are not patentably distinct over claims 1, 2, 4-6, 17, and 18 of copending Application No. 11/664,705. Copending Application No. 11/664,705 fails to recite, at a minimum, "magnesium stearate."

The Examiner contends that claims 1-2, 4-6, and 17-18 of '705 recite 100 parts by weight of a polyacetal resin, 0.005 to 2 parts by weight melamine, and 0.01 to 3 parts by weight of

triethylene glycol bis-[3-(3-tert-butyl-5-methyl-4-hydroxypheny)-propionate. The Examiner acknowledges that claims 1-2, 4-6, and 17-18 of '705 lack magnesium stearate and reinforcing fillers. As for the deficiencies, the Examiner contends that Matsumoto discloses a composition comprising a polyacetal resin, magnesium stearate, and reinforcing fillers.

However, claims 1-2, 4-6, and 17-18 of '705 and Matsumoto do not disclose that if the POM resin composition of Matsumoto comprises the claimed magnesium stearate, molded articles of the composition have improved fuel resistance, thus the molded articles may be used in parts directly contacting fuel, such as, diesel having sulfur compounds or gasoline fuel that causes the decomposition of polyoxymethylene.

Claims 1-8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4-5 of Kim '262 in view of Matsumoto. Applicants traverse.

Page 14 of the instant Office Action states that claims 1-8 are not patentably distinct over claims 1, 4, and 5 of commonly assigned Kim '262. Kim '262 fails to **recite**, at a minimum, "magnesium stearate."

The Examiner contends that Kim '262 claims a polyacetal composition comprising antioxidant and thermal stabilizers in the amount of 0.01 to 1 parts by weight, and molded articles made from polyacetal compositions. The Examiner admits that claims 1 and 4-5 of Kim '262 lack additional ingredients, such as, magnesium stearate and reinforcing fillers. for the deficiencies, the Examiner contends that Matsumoto discloses a composition comprising a polyacetal resin, magnesium stearate, and reinforcing fillers.

Kim '262 describes a POM resin composition having a wear resistance and abruption-preventing effect, which comprises POM, antioxidant, thermal stability, and polyethylene

vinylacetate copolymer and hydroxyl pentaerythritol fatty acid ester. However, the combination of Kim '262 and Matsumoto do not disclose that if the POM resin composition of Kim '262 comprises magnesium stearate, molded articles of the composition have improved fuel resistance and the molded articles may be used in parts directly contacting fuel, such as, diesel having sulfur compounds or gasoline fuel that cause the decomposition of polyoxymethylene.

Claims 1-8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable of claims 1 and 11-12 of U.S. Patent No. 6,512,047 to Kim et al. ("Kim '047") in view of Matsumoto. Applicants traverse.

Page 17 of the instant Office Action states that claims 1-8 are not patentably distinct over claims 1, 4, and 5 of copending Kim '047. Copending Kim '047 fails to recite, at a minimum, "magnesium stearate."

The Examiner contends that Kim '047 claims a polyacetal composition comprising antioxidant and thermal stabilizers in the amount of 0.01 to 1 parts by weight, and molded articles made from polyacetal compositions. The Examiner admits that claims 1 and 4-5 of Kim '047 lack additional ingredients, such as, magnesium stearate and reinforcing fillers. As for the deficiencies, the Examiner contends that Matsumoto discloses a composition comprising a polyacetal resin, magnesium stearate, and reinforcing fillers.

Kim '047 describes a POM resin composition having enhanced tensile elongation, thermal stability, processibility, and impact resistance, which comprises POM and polymers. However, the combination of Kim '047 and Matsumoto do not disclose that if the POM resin composition of Kim '047 comprises magnesium stearate, molded articles of the composition have improved fuel resistance and the molded articles may be used in parts directly contacting

fuel, such as, diesel having sulfur compounds or gasoline fuel that cause the decomposition of polyoxymethylene.

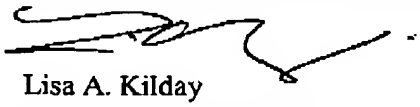
Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



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